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(54) Title: LOW TEMPERATURE EXTRUSION PROCESS AND DEVICE FOR ENERGY OPTIMIZED AND VISCOSITY ADAPTED MICRO-STRUCTURING OF FROZEN AERATED MASSES

(57) Abstract: The invention describes a low temperature extrusion process and a respective device for an energy-optimized and viscosity-adapted microstructuring of frozen aerated systems like ice cream. Therewith a very finely dispersed microstructure is reached under optimized balance of viscous friction based mechanical energy dissipation (1) and transfer of dissipation heat and additional phase transition (freezing) heat (2) to a refrigerant up to very high frozen water fraction at very low temperatures. With this new process and device aerated masses are continuously frozen and optimally micro-structured under minimized / optimized mechanical energy input. The microstructure of this-like treated masses supports on the one hand preferred rheological properties which lead to improved shaping, portioning and scooping properties, even at very low temperatures, and on the other hand leads to an improved shelf life (heat shock stability) and mouth feel (e.g. creaminess, melting behavior).